

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (previously presented) A data transfer apparatus for transferring a packet based on transfer information corresponding to one of a plurality of entries set in a packet search table in advance, comprising:

a packet search table (2) receiving a packet search information for a packet to be transferred, the packet search table comprising

a plurality of registration tables (22, 23, 24, 25) storing said transfer information set in advance and registered by objectives;

a search means (20) to search for the transfer information, from the registration tables, based on the received packet search information;

a transfer information address table (21) having address information registration positions of each of said plurality of registration tables, the registration positions indicating address information where said transfer information is stored by said registration tables, the address information being output by the transfer information address table to the

registration tables to obtain transfer information corresponding to the packet search information received by the search means,

the registration tables outputting the obtained transfer information for transferring the packet; and

a search process circuit (1) that receives the packet to be transferred and issues the packet search information to the packet search table,

wherein, the search means receives the issued packet search information and comprises a content-addressable memory (20) with stored search pattern entries that satisfy different packet search information so a received packet search information hits a satisfying search pattern entry, the search pattern entries having been stored prior to receipt of the packet search information,

the transfer information address table (21), receives input from the content-addressable memory (20), the information registration positions corresponding to the search pattern entries so the hit search pattern entry selects a corresponding registration position, the corresponding registration position indicating a corresponding address information where said transfer information is stored by said registration tables, the corresponding address information being output by the transfer information address table to the registration tables to obtain the transfer information corresponding to the received packet search information, and

the registration tables connected to output the obtained transfer information to the search process circuit,

wherein said plurality of entries are classified into a plurality of types, and

wherein, the registration tables comprise a policer information table (22), an application transfer information table (23), an in-system common transfer information table (24) and an output information table (25).

2. (cancelled)

3. (previously presented) The data transfer apparatus according to claim 1, wherein said plurality of entries are classified into a plurality of types, and wherein said plurality of entries are classified at least into fixed entries that are fixedly set on initialization of a system and variable entries that are comprised of either the entries to be set or deleted during operation of said system or the entries to be dynamically set or deleted by a routing protocol.

4. (previously presented) The data transfer apparatus according to claim 1, wherein said plurality of entries are classified into a plurality of types, and further comprising search entries wherein said plurality of entries are classified

into said plurality of types so as to execute a search process for said search entries independently by functions.

5. (original) The data transfer apparatus according to claim 4, wherein said search means has its functions classified, to be performed independently, into a packet account only for counting up counters used for collecting of packet statistical information, a packet filter used for determining whether the packet is acceptable or unacceptable, and a QoS assurance flow search for obtaining information on QoS (Quality of Service) transfer.

6. (previously presented) The data transfer apparatus according to claim 1, wherein said plurality of entries are classified into a plurality of types, and wherein transfer information obtained as a result of a search of said search means is divided by objectives.

7. (original) The data transfer apparatus according to claim 1, wherein said search means executes a search process on receipt of said packet a plurality of times.

8. (original) The data transfer apparatus according to claim 7, wherein said search means executes the search process on

receipt of said packet according to the set number of said plurality of entries.

9. (original) The data transfer apparatus according to claim 1, wherein the transfer information obtained as a result of a search of said search means is shared by indirect referencing by said address.

10. (currently amended) A transfer information management method of a data transfer apparatus for transferring a packet based on transfer information corresponding to one of a plurality of entries set in a packet search table in advance,

wherein management is conducted by:

registering function entries (A, B, C) in a function table (20);

registering address information (#1, #2, #3) in a transfer information address table (21) with each registered function entry in the function table linked to a registered address information in the address table so that when any function entry is hit during a packet search, a corresponding address information from the address table is read; and

registering said transfer information in a plurality of registration tables (22, 23, 24) by objectives, wherein,

the registering of the address of each of said plurality of registration tables in the address table links the

transfer information stored on each of said plurality of registration tables based on the address of said address table corresponding to a matching entry of said plurality of entries, [[and]]

the registration tables comprise a policer information table (22), an application transfer information table (23), an in-system common transfer information table (24) and an output information table (25),

sending a packet search information, based on information found in a packet to be forwarded to a destination, to the function table and forwarding the packet to the destination based on the transfer information received as a result of the sent packet search information.

11. (previously presented) The transfer information management method according to claim 10, wherein,

said function table is a content-addressable memory, and

said plurality of entries are managed by classifying them into a plurality of types.

12. (original) The transfer information management method according to claim 11, wherein said plurality of entries are classified at least into fixed entries that are fixedly set on initialization of a system and variable entries that are

comprised of either the entries to be set or deleted during operation of said system or the entries to be dynamically set or deleted by a routing protocol.

13. (original) The transfer information management method according to claim 11, wherein transfer information obtained as a result of a search is managed by dividing it by objectives.

14. (original) The transfer information management method according to claim 10, wherein the transfer information obtained as a result of a search is managed by sharing it by indirect referencing by said address.

15. (currently amended) A transfer information search method of a data transfer apparatus for transferring a packet based on transfer information corresponding to one of a plurality of entries set in a packet search table in advance, comprising the steps of:

in advance, creating a function table set with a plurality of search pattern entries, registration tables with transfer information registered by objectives, and a transfer information address table set with address information of the transfer information that corresponds to the search pattern entries;

sending a input packet search information, based on
information found in a packet to be forwarded to a destination,
to the function table;

searching the function table for an entry, from said
plurality of entries, matching ~~an~~ the input packet search
information;

obtaining an address corresponding to the matching
entry of said plurality of entries from the address table;
[[and]]

obtaining the transfer information on each of said
plurality of registration tables based on the obtained address;
and

forwarding the packet to the destination based on the
obtained transfer information,

wherein, the registration tables comprise a policer
information table (22), an application transfer information table
(23), an in-system common transfer information table (24) and an
output information table (25).

16. (previously presented) The transfer information
search method according to claim 15, wherein,

said function table is a content-addressable memory,
and

said plurality of entries are classified into a
plurality of types.

17. (original) The transfer information search method according to claim 16, wherein said plurality of entries are classified at least into fixed entries that are fixedly set on initialization of a system and variable entries that are comprised of either the entries to be set or deleted during operation of said system or the entries to be dynamically set or deleted by a routing protocol.

18. (original) The transfer information search method according to claim 16, wherein transfer information obtained in said step of obtaining the transfer information is divided by objectives.

19. (original) The transfer information search method according to claim 15, wherein the search process on receipt of said packet is executed a plurality of times in said step of obtaining the address corresponding to the entry.

20. (original) The transfer information search method according to claim 19, wherein the search process on receipt of said packet is executed according to the set number of said plurality of entries in said step of obtaining the address corresponding to the entry.

21. (original) The transfer information search method according to claim 19, wherein a search process is executed independently, divided by functions in said step of obtaining the transfer information.

22. (original) The transfer information search method according to claim 21, further comprising search entries wherein said plurality of entries are classified into said plurality of types so as to execute a search process for said search entries independently, divided by functions.

23. (original) The transfer information search method according to claim 22, wherein, in said step of obtaining the address corresponding to the entry, said search process has its functions classified, to be performed independently, into a packet account only for counting up counters used for collecting packet statistical information, a packet filter used for determining whether the packet is acceptable or unacceptable, and a QoS assurance flow search for obtaining information on QoS (Quality of Service) transfer.

24. (original) The transfer information search method according to claim 15, wherein the transfer information obtained in said step of obtaining the transfer information is shared by indirect referencing by said address.

25. (cancelled)